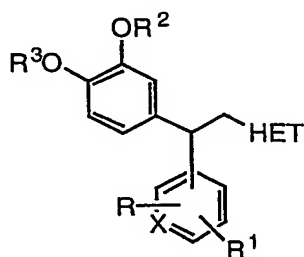


## WHAT IS CLAIMED IS:

1. A method of treatment of rheumatoid arthritis by administering, to one in need of such treatment, an effective amount of a phosphodiesterase-4 inhibiting compound.

2. A method of treatment of rheumatoid arthritis by administering, to one in need of such treatment, an effective amount of a compound represented by Formula (I):



(I)

or a pharmaceutically acceptable salt thereof wherein:

R is hydrogen, C<sub>1</sub>-6alkyl, halogen or CF<sub>3</sub>;

R<sup>1</sup> is -(CH<sub>2</sub>)<sub>m</sub>-CO-N(R<sup>4</sup>)-S(O)<sub>2</sub>-R<sup>5</sup>, -(CH<sub>2</sub>)<sub>m</sub>-CO-N(R<sup>4</sup>)-S(O)<sub>2</sub>-NR<sup>6</sup>R<sup>7</sup>, -(CH<sub>2</sub>)<sub>m</sub>-S(O)<sub>2</sub>-N(R<sup>4</sup>)-CO-R<sup>4</sup>, -(CH<sub>2</sub>)<sub>m</sub>-S(O)<sub>2</sub>-N(R<sup>4</sup>)-CO-NR<sup>6</sup>R<sup>7</sup>, or -C(OH)(C<sub>1</sub>-6haloalkyl)<sub>2</sub>, wherein m is 0, 1 or 2,

R<sup>2</sup> and R<sup>3</sup> are each independently C<sub>1</sub>-7alkyl, substituted C<sub>1</sub>-7 alkyl, wherein the substituent is F, Cl, Br or I, 2-phenethyl or 2-indanyl, optionally mono or di-substituted, wherein the substituents on the benzene ring are each independently halogen, -C<sub>1</sub>-6alkoxy, -C<sub>1</sub>-6alkylthio, -CN, -CF<sub>3</sub>, -C<sub>1</sub>-6alkyl, -N<sub>3</sub>, or -CO<sub>2</sub>H,

R<sup>4</sup> is hydrogen, -C<sub>1</sub>-6alkyl, phenyl, benzyl or 2-phenethyl, optionally mono or di-substituted, wherein the substituents on the benzene ring are independently halo, -C<sub>1</sub>-6alkoxy, -C<sub>1</sub>-6alkylthio, -CN, -CF<sub>3</sub>, -C<sub>1</sub>-6alkyl, -N<sub>3</sub>, or -CO<sub>2</sub>H,

R<sup>5</sup>, R<sup>8</sup> and R<sup>11</sup> are each independently -CF<sub>3</sub>, -C<sub>1</sub>-6alkyl, phenyl, benzyl or 2-phenethyl, optionally mono or di-substituted, wherein the substituents on the benzene ring are independently halogen, -C<sub>1</sub>-6alkoxy, -C<sub>1</sub>-6alkylthio, -CN, -CF<sub>3</sub>, -C<sub>1</sub>-6alkyl, N<sub>3</sub>, or -CO<sub>2</sub>H,

R<sup>6</sup>, R<sup>7</sup>, R<sup>9</sup> and R<sup>10</sup> are each independently hydrogen, or -C<sub>1</sub>-6alkyl, or

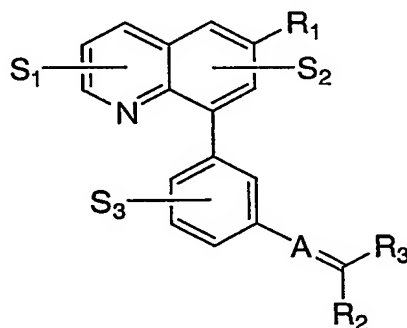
R<sup>6</sup> and R<sup>7</sup> may be joined to form a saturated 5, 6 or 7 membered heterocycle, said heterocycle containing a heteroatom which is nitrogen and optionally containing an

additional hetero atom which is an O or an S atom or  $\text{NR}^4$ , and optionally containing a carbonyl group;

HET is pyridyl or imidazolyl, optionally mono-, or disubstituted, wherein the substituents are independently halogen,  $-\text{C}_1\text{-C}_6\text{alkyl}$ ,  $-\text{C}_1\text{-C}_6\text{alkoxy}$ ,  $-\text{C}_1\text{-C}_6\text{alkylthio}$ , benzyl, 2-phenethyl,  $-\text{NHCOR}^8$ ,  $-\text{NR}^9\text{R}^{10}$ ,  $-\text{NHS(O)}_2\text{R}^{11}$ , OH,  $-\text{CN}$ , or  $-\text{CF}_3$ , or the N-oxides thereof; and

X is N,  $\text{N}\rightarrow\text{O}$ , or CH.

3. A method of treatment of rheumatoid arthritis by administering to one in need of such treatment an effective amount of a compound represented by Formula (II):



(II)

or a pharmaceutically acceptable salt thereof, wherein

$\text{S}_1$ ,  $\text{S}_2$ , and  $\text{S}_3$  are independently H,  $-\text{OH}$ , halogen,  $-\text{C}_1\text{-C}_6\text{alkyl}$ ,  $-\text{NO}_2$ ,  $-\text{CN}$ , or  $-\text{C}_1\text{-C}_6\text{alkoxy}$ , wherein the alkyl and alkoxy groups are optionally substituted with 1-5 substituents; wherein each substituent is independently a halogen or OH;

$\text{R}_1$  is a H, OH, halogen, or  $-\text{C}_1\text{-C}_6\text{alkyl}$ ,  $-\text{cycloC}_3\text{-C}_6\text{alkyl}$ ,  $-\text{C}_1\text{-C}_6\text{alkenyl}$ ,  $-\text{C}_1\text{-C}_6\text{alkoxy}$ , aryl, heteroaryl,  $-\text{CN}$ ,  $-\text{heterocycloC}_3\text{-C}_6\text{alkyl}$ ,  $-\text{amino}$ ,  $-\text{C}_1\text{-C}_6\text{alkylamino}$ ,  $-(\text{C}_1\text{-C}_6\text{alkyl})(\text{C}_1\text{-C}_6\text{alkyl})\text{amino}$ ,  $-\text{C}_1\text{-C}_6\text{alkyl(oxy)}\text{C}_1\text{-C}_6\text{alkyl}$ ,  $-\text{C(O)NH(aryl)}$ ,  $-\text{C(O)NH(heteroaryl)}$ ,  $-\text{SO}_n\text{NH(aryl)}$ ,  $-\text{SO}_n\text{NH(heteroaryl)}$ ,  $-\text{SO}_n\text{NH}(\text{C}_1\text{-C}_6\text{alkyl})$ ,  $-\text{C(O)N}(\text{C}_0\text{-C}_6\text{alkyl})(\text{C}_0\text{-C}_6\text{alkyl})$ ,  $-\text{NH-SO}_n\text{-(C}_1\text{-C}_6\text{alkyl)}$ ,  $-\text{SO}_n\text{-(C}_1\text{-C}_6\text{alkyl)}$ ,  $-(\text{C}_1\text{-C}_6\text{alkyl})\text{-O-C(CN)-dialkylamino}$ , or  $-(\text{C}_1\text{-C}_6\text{alkyl})\text{-SO}_n\text{-(C}_1\text{-C}_6\text{alkyl)}$  group, wherein any of the groups is optionally substituted with 1-5 substituents; wherein each substituent is independently a halogen,  $-\text{OH}$ ,  $-\text{CN}$ ,  $-\text{C}_1\text{-C}_6\text{alkyl}$ ,  $-\text{cycloC}_3\text{-C}_6\text{alkyl}$ ,  $-\text{C(O)(heterocycloC}_3\text{-C}_6\text{alkyl)}$ ,  $-\text{C(O)-O-(C}_0\text{-C}_6\text{alkyl)}$ ,  $-\text{C(O)-aryloxy}$ ,  $-\text{C}_1\text{-C}_6\text{alkoxy}$ ,  $-(\text{C}_0\text{-C}_6\text{alkyl})(\text{C}_0\text{-C}_6\text{alkyl})\text{amino}$ , cycloalkyloxy, acyl, acyloxy,  $-\text{cycloC}_3\text{-C}_6\text{alkyl}$ ,  $-\text{heterocycloC}_3\text{-C}_6\text{alkyl}$ , aryl, heteroaryl, carbamoyl, or  $-\text{SO}_n\text{-(C}_1\text{-C}_6\text{alkyl)}$ ;

A is CH, C-ester, or C-R<sub>4</sub>;

R<sub>2</sub> and R<sub>3</sub> independently is an aryl, heteroaryl, H, halogen, -CN, -C<sub>1</sub>-C<sub>6</sub>alkyl, heterocycloC<sub>3</sub>-C<sub>6</sub>alkyl, -C<sub>1</sub>-C<sub>6</sub>alkoxy, carbamoyl, -C(O)OH, -(C<sub>1</sub>-C<sub>6</sub>alkyl)-SO<sub>n</sub>-(C<sub>1</sub>-C<sub>6</sub>alkyl), -C(O)N(C<sub>0</sub>-C<sub>6</sub>alkyl)(C<sub>0</sub>-C<sub>6</sub>alkyl), or -C<sub>1</sub>-C<sub>6</sub>alkylacylamino group, wherein any of the groups is  
 5 optionally substituted with 1-5 substituents, wherein each substituent is independently an aryl, heteroaryl, halogen, -NO<sub>2</sub>, -C(O)OH, -CN, -C<sub>1</sub>-C<sub>6</sub>alkyl, -SO<sub>n</sub>-(C<sub>1</sub>-C<sub>6</sub>alkyl), -SO<sub>n</sub>-(aryl), aryloxy, -heteroaryloxy, C<sub>1</sub>-C<sub>6</sub>alkoxy, N-oxide, -C(O)-heterocycloC<sub>3</sub>-C<sub>6</sub>alkyl, -NH-cycloC<sub>3</sub>-C<sub>6</sub>alkyl, amino, -OH, or -(C<sub>0</sub>-C<sub>6</sub>alkyl)(C<sub>0</sub>-C<sub>6</sub>alkyl)amino, -C(O)-N(C<sub>0</sub>-C<sub>6</sub>alkyl)(C<sub>0</sub>-C<sub>6</sub>alkyl) substituent group, wherein each substituent group  
 10 independently is optionally substituted with -OH, C<sub>1</sub>-C<sub>6</sub>alkoxy, -C<sub>1</sub>-C<sub>6</sub>alkyl, -cycloC<sub>3</sub>-C<sub>6</sub>alkyl, aryloxy, -C(O)OH, -C(O)O(C<sub>1</sub>-C<sub>6</sub>alkyl), halogen, -NO<sub>2</sub>, -CN, -SO<sub>n</sub>-(C<sub>1</sub>-C<sub>6</sub>alkyl), or -C(O)-N(C<sub>0</sub>-C<sub>6</sub>alkyl)(C<sub>0</sub>-C<sub>6</sub>alkyl);

one of R<sub>2</sub> and R<sub>3</sub> must be an aryl or heteroaryl, optionally substituted;

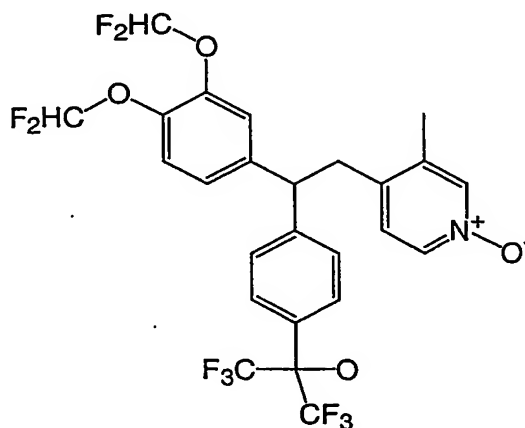
when R<sub>2</sub> and R<sub>3</sub> are both an aryl or heteroaryl, then R<sub>2</sub> and R<sub>3</sub> may be optionally  
 15 connected by a thio, oxy, or (C<sub>1</sub>-C<sub>4</sub>alkyl) bridge to form a fused three ring system;

R<sub>4</sub> is an aryl, -C<sub>1</sub>-C<sub>6</sub>alkyl, heteroaryl, -CN, carbamoyl, -(C<sub>1</sub>-C<sub>6</sub>alkyl)-SO<sub>n</sub>-(C<sub>1</sub>-C<sub>6</sub>alkyl), -C(O)N(C<sub>0</sub>-C<sub>6</sub>alkyl)(C<sub>0</sub>-C<sub>6</sub>alkyl), or -C<sub>1</sub>-C<sub>6</sub>alkylacylamino group, wherein any of the groups is optionally substituted with 1-5 substituents, wherein each substituent is independently a -CN, halogen, -C(O)(C<sub>0</sub>-C<sub>6</sub>alkyl), -C(O)O(C<sub>0</sub>-C<sub>6</sub>alkyl), -C<sub>1</sub>-C<sub>6</sub>alkyl,  
 20 -SO<sub>n</sub>-(C<sub>1</sub>-C<sub>6</sub>alkyl), -OH, C<sub>1</sub>-C<sub>6</sub>alkoxy, or -(C<sub>0</sub>-C<sub>6</sub>alkyl)(C<sub>0</sub>-C<sub>6</sub>alkyl)amino, group;

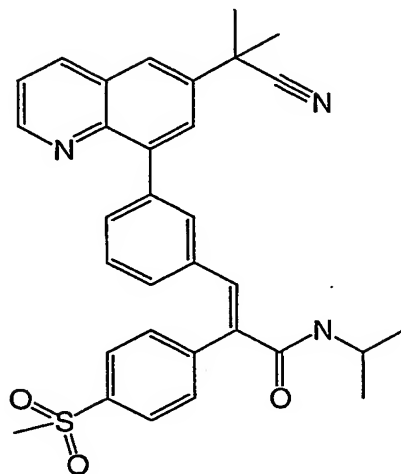
n is independently 0, 1, or 2; and

R<sub>2</sub> or R<sub>3</sub> may optionally be joined to R<sub>4</sub> by a bond to form a ring.

4. The method of claim 2, wherein said compound is represented by

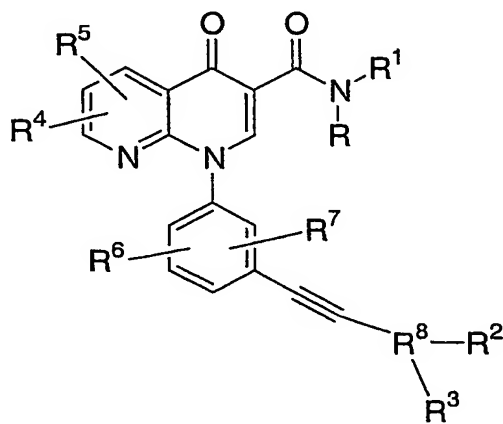


5. The method of claim 3, wherein said compound is represented by



6. A method of treatment of rheumatoid arthritis by administering to one in need of such treatment an effective amount of N-(3,5-dichloropyrid-4-yl)-3-cyclopropylmethoxy-4-difluoromethoxybenzamide.

7. A method of treatment of rheumatoid arthritis by administering, to one in need of such treatment, an effective amount of a compound represented by Formula (III):



## (III)

or a pharmaceutically acceptable salt thereof, wherein

R is H, -C<sub>1-6</sub>alkyl or -C<sub>3-6</sub>cycloalkyl;

- 5 R<sup>1</sup> is H, or a -C<sub>1-6</sub>alkyl, -C<sub>3-6</sub>cycloalkyl, -C<sub>1-6</sub>alkoxy, -C<sub>2-6</sub>alkenyl, -C<sub>3-6</sub>alkynyl, -C(O)-C<sub>1-6</sub>alkyl, -C(O)-aryl, -(C<sub>0-6</sub>alkyl)-SO<sub>n</sub>-(C<sub>1-6</sub>alkyl), -(C<sub>0-6</sub>alkyl)-SO<sub>n</sub>-(aryl), phenyl, heteroaryl, or heterocycloC<sub>3-7</sub>alkyl group, wherein any of the groups is optionally substituted with 1-3 independent -C<sub>1-6</sub>alkyl, -C<sub>1-6</sub>alkoxy, OH, -N(C<sub>0-6</sub>alkyl)(C<sub>0-6</sub>alkyl), -(C<sub>0-6</sub>alkyl)-SO<sub>n</sub>-(C<sub>1-6</sub>alkyl), nitro, CN, =N-O-C<sub>1-6</sub>alkyl, -O-N=C<sub>1-6</sub>alkyl, or halogen substituents;
- 10 R<sup>2</sup> is absent, H, halogen, -C<sub>1-6</sub>alkyl, -C<sub>3-6</sub>cycloalkyl, -C<sub>1-6</sub>alkyl(C<sub>3-6</sub>cycloalkyl)(C<sub>3-6</sub>cycloalkyl), -C<sub>1-6</sub>alkoxy, phenyl, heteroaryl, heterocycloC<sub>3-7</sub>alkyl, nitro, CN, =N-O-C<sub>1-6</sub>alkyl, -O-N=C<sub>1-6</sub>alkyl, -N(C<sub>0-6</sub>alkyl)(C<sub>0-6</sub>alkyl), -NHSO<sub>n</sub>-(C<sub>1-6</sub>alkyl), -NHC(O)-C<sub>1-6</sub>alkyl, -NHC(O)-aryl, -C(O)-C<sub>1-6</sub>alkyl, -C(O)-O-C<sub>1-6</sub>alkyl, -C<sub>1-6</sub>alkyl(=N-OH), -C(N=NOH)C<sub>1-6</sub>alkyl, -C<sub>0-6</sub>alkyl(oxy)C<sub>1-6</sub>alkyl-phenyl, -SO<sub>n</sub>NH(C<sub>0-6</sub>alkyl), or -(C<sub>0-6</sub>alkyl)-SO<sub>n</sub>-(C<sub>1-6</sub>alkyl), wherein the phenyl, heteroaryl or
- 15 heterocycloC<sub>3-7</sub>alkyl is optionally substituted with halogen, -C<sub>1-6</sub>alkyl, -C<sub>1-6</sub>alkoxy, hydroxy, -N(C<sub>0-6</sub>alkyl)(C<sub>0-6</sub>alkyl), or -C(O)-O-C<sub>1-6</sub>alkyl, and any alkyl is optionally substituted with 1-6 independent halogen or -OH substituents;

n is 0, 1, or 2;

- 20 R<sup>3</sup> is absent, H, OH, -N(C<sub>0-6</sub>alkyl)(C<sub>0-6</sub>alkyl), halogen or C<sub>1-6</sub>alkyl, wherein any alkyl is optionally substituted with 1-6 independent halogen, OH, or -N(C<sub>0-6</sub>alkyl)(C<sub>0-6</sub>alkyl) substituents;

R<sup>4</sup>, R<sup>5</sup>, R<sup>6</sup>, and R<sup>7</sup> each independently is H, halogen, -C<sub>1-6</sub>alkyl, -C<sub>1-6</sub>alkoxy, -SO<sub>n</sub>-(C<sub>1-6</sub>alkyl), nitro, CN, or -N(C<sub>0-6</sub>alkyl)(C<sub>0-6</sub>alkyl), and any alkyl is optionally substituted with 1-6 independent halogen or -OH substituents; and

- 25 R<sup>8</sup> is phenyl, pyridyl, pyrimidyl, indolyl, quinoliny, thienyl, pyridonyl, oxazolyl, oxadiazolyl, thiazolyl, thiadiazolyl, or imidazolyl; or oxides thereof when R<sup>8</sup> is a heteroaryl; or H, -C<sub>1-6</sub>alkyl, or -C<sub>3-6</sub>cycloalkyl, and any alkyl is optionally substituted with 1-6 independent halogen, -N(C<sub>0-6</sub>alkyl)(C<sub>0-6</sub>alkyl), -N(C<sub>3-7</sub>cycloalkyl)(C<sub>0-6</sub>alkyl), -N(C<sub>3-7</sub>cycloalkyl)(C<sub>3-7</sub>cycloalkyl), N-heterocycloC<sub>4-7</sub>alkyl, -SO<sub>n</sub>-(C<sub>1-6</sub>alkyl), -SO<sub>n</sub>-(aryl), or -OH substituents.

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